WHAT IS CLAIMED IS:

1. A wavelength multiplexing on-chip optical interconnection circuit, comprising:

a plurality of circuit blocks provided on one integrated circuit chip; and

an optical waveguide provided on the integrated circuit chip as a transmission line to transmit a plurality of light components having different wavelengths between the circuit blocks.

2. The wavelength multiplexing on-chip optical interconnection circuit according to Claim 1,

the circuit blocks being optically and electrically connected to each other.

3. The wavelength multiplexing on-chip optical interconnection circuit according to Claim 1,

at least a part of the optical waveguide being provided on top surfaces of the circuit blocks.

4. The wavelength multiplexing on-chip optical interconnection circuit according to Claim 1,

at least a part of the optical waveguide being provided on the circuit blocks to traverse the circuit blocks.

5. The wavelength multiplexing on-chip optical interconnection circuit according to Claim 1,

at least a part of the optical waveguide being provided to detour around the circuit blocks.

6. The wavelength multiplexing on-chip optical interconnection circuit according to Claim 1, further comprising:

at least one of a light emitting element and a light receiving element being electrically connected to each of the circuit blocks,

the light emitting element emitting a light component having a predetermined wavelength into the optical waveguide, and

the light receiving element receiving a light component having a predetermined wavelength from the optical waveguide.

7. The wavelength multiplexing on-chip optical interconnection circuit according to Claim 6,

the light emitting element being a first micro-tile shaped element,

a plurality of the first micro-tile shaped elements being provided on the integrated circuit chip,

each of the first micro-tile shaped elements emitting any one of the two or more light components having different wavelengths,

the light receiving element being a second micro-tile shaped element,

a plurality of the second micro-tile shaped elements being provided on the integrated circuit chip, and

each of the second micro-tile shaped elements selectively receiving any one of the two or more light components having different wavelengths.

8. The wavelength multiplexing on-chip optical interconnection circuit according to Claim 7,

at least a part of the optical waveguide covering being at least one of the first micro-tile shaped elements and the second micro-tile shaped elements.

9. The wavelength multiplexing on-chip optical interconnection circuit according to Claim 1,

the circuit blocks being any one of a CPU, a memory circuit, a DSP, an RF amplifying circuit, an image sensor, and a bio sensor, and

the optical waveguide being a transmission line of data signals or clock signals.

10. The wavelength multiplexing on-chip optical interconnection circuit according to Claim 7,

at least one of a plurality of the first micro-tile shaped elements and a plurality of the second micro-tile shaped elements being provided on one of the circuit blocks, and

the plurality of first micro-tile shaped elements or the plurality of second micro-tile shaped elements having emitting wavelengths or receiving wavelengths different from each other.

11. The wavelength multiplexing on-chip optical interconnection circuit according to Claim 7,

a plurality of the first micro-tile shaped elements being provided on one of the circuit blocks,

a plurality of the second micro-tile shaped elements being provided on another of the circuit blocks,

one of the first micro-tile shaped elements selectively emitting a light component having a first wavelength,

another of the first micro-tile shaped elements selectively emitting a light component having a second wavelength, which differs from the first wavelength,

one of the second micro-tile shaped elements selectively receiving the light component having the first wavelength,

another of the second micro-tile shaped elements selectively receiving the light component having the second wavelength.

12. The wavelength multiplexing on-chip optical interconnection circuit according to Claim 1,

a plurality of the integrated circuit chips being mounted on a substrate, and

the plurality of integrated circuit chips being optically connected to each other at least through the micro-tile shaped elements having a light emitting function or a light receiving function and the optical waveguide provided on the substrate.

13. The wavelength multiplexing on-chip optical interconnection circuit according to Claim 1,

a plurality of the integrated circuit chips being mounted on a substrate,

the integrated circuit chips being tightly bonded to each other, and

the integrated circuit chips being optically or electrically connected to each other.

14. An electro-optical device, comprising:

the wavelength multiplexing on-chip optical interconnection circuit according to Claim 1.

15. An electronic apparatus, comprising:

the wavelength multiplexing on-chip optical interconnection circuit according to Claim 1.